# CYSTOSCOPIC FINDINGS IN SIXTY-FIVE CONSECUTIVE CASES FROM THE SERVICE OF DR. LOUIS E. SCHMIDT, AT THE ALEXIAN BROTHERS' HOSPITAL, CHICAGO.

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The report of this series of cases shows findings obtained only with the Nitze observation cystoscope. However, other modes of examination are used in case an examination cannot be made with the Nitze instrument, and if the requirements for its fulfillment are not present. Dr. Schmidt is an ardent advocate of the Nitze method in preference to other methods for routine work.

As this paper is not one on general cystoscopy, but only on the routine work of this department, only the *modus operandi* will be described, which is customary in the regular work. Hence no description of other methods or of technical details which were not met with in this series of cases, will be given.

This method of cystoscopy depends for its performance upon two fundamental principles: (1) The illumination of the interior of the bladder, which is obtained by introducing the source of light into the cavity of the bladder, just exactly as in our system of room illumination in which the source of light is placed within the room we wish to illuminate. This principle is fulfilled by the small incandescent light which is carried in the beak of the instrument. The second principle is fulfilled by a system of lenses carried in the shaft of the cystoscope; the arrangement of the lenses is such that a large area of the bladder can be seen, which gives a large field. The picture produced is an inverted one; that is, it appears upside down. The nearer the window of the cystoscope is placed to the bladder wall, the larger and more distinct is the picture we see; but this occurs at the expense of the area of the bladder seen, and vice versa, the farther away from the bladder wall that the window is held, the larger is the surface of the bladder brought into view, with a loss, however, of the details of the picture. The inverted picture may be corrected by adding an extra prism to the ocular end of the cystoscope, which then gives us a picture right side up. The picture then appears just as it is in the bladder.

Under certain circumstances it may be desirable in a given case to resort to some other method of cystoscopy than the water dilatation method of Nitze. When such conditions arise, recourse is had to some of the methods of air dilatation, such as the Pawlik-Kelly, Luys, or any modification of air dilatation cystoscopes. This method of cystoscopy will be taken up in another publication at some future time.

At times it has been found impossible to carry out a complete or a satisfactory cystoscopic examination in a given case in one sitting; in such a case no attempt is made to complete cystoscopic examination when condisequent cystoscopy is undertaken at a later date. No hestitancy is ever taken to carry out this general plan of not trying to do a complete cystoscopic examination when conditions do not warrant it.

It has always been the custom to take the patients into consideration first—and their disease secondly—unless it is a question of absolute necessity. Where time can be taken for carrying out an examination, it is always done. Pain should never be produced—nor is an examination undertaken that may cause traumatism. In other words, it is of prime importance to consider the patient's comfort as well as his condition, so that it is not changed for the worse by the examination. There can be no question that unskillful and careless procedures give rise unnecessarily to disagreeable consequences.

As before mentioned, it may for various reasons be necessary to cystoscope the patient a second time. During the time that elapses between the first and second examinations, the patients are given "*preparatory treatment*" for the second cystoscopic examination, which treatment depends upon the nature of each individual case. Attention is given to the bowels by using any of the salines; hot sitz baths morning and evening combined with large hot moist dressings over the pubes and the perineum. Should it be necessary to use opiates, these are usually administered in the form of suppositories per rectum. Vesical irrigations with solutions of silver nitrate or boric acid are indispensable adjuncts in certain cases.

During this time stricture, if present, is treated; irritable conditions are overcome, and if hemorrhage is present treatment is directed toward its control as much as possible.

In this series of cases there have been many patients who had been "cystoscoped elsewhere;" the preparatory treatment has always made our examination rather a "pleasure" than one of fear of consequences and pain which accompanied their previous examination.

It is a strict rule of the service not to subject patients to unnecessary examinations. All known means are always used to establish a diagnosis previous to cystoscopy. Cystoscopy is resorted to only as a *ressort dernier.* In other words, if no cystoscopic examination is necessary, it is not made, but if the least doubt is present there is never any hesitancy in making the examination. In addition to the two above-mentioned rules—no pain; no traumatism—a third may be added—no unnecessary examinations.

The ever-increasing demands for a more accurate diagnosis as regards the nature and seats of lesions in the urinary tract are being satisfied for two reasons: First, for practical purposes we may say that the cystoscope as now obtainable on the market is an almost perfect instrument; and, secondly, the value of the cystoscope (with or without ureteral catheterization) as a localizer of pathology in the urinary tract is being recognized more and more every day, and hence a more universal employment of the cystoscope in all cases that present symptoms of disease in the urinary tract.

Blood and pus are the two most common objective symptoms that occur in diseases of the urinary tract. Bearing in mind the fact that the urinary tract extends from the kidney to the external urethral orifice, it is at once apparent that an exact localization of the pathological process which is producing the symptoms is a difficult problem. Not only is this problem a difficult one from the objective symptoms alone, but it becomes confusing a good many times when we attempt to do this by reasoning from the subjective symptoms, as elicited from the patient. This is especially true in cases presenting an atypical history. For example, a patient may complain of pain in the lumbar region on one side, radiating down into the bladder, which at once draws our attention to the kidney. Oftentimes blood and pus are present in the urine, and a diagnosis of stone in the kidney is made. Great, however, is the surprise when, for example, a large stone or a bladder tumor is found upon cystoscopic examination. Or, on the other hand, those cases in which bladder symptoms, such as frequent urination, pain and tenesmus, predominate. This is especially apt to be the case in tubersulosis of the kidney, which often has advanced to a high degree of kidney involvement, without the production of any symptoms referable to the kidneys. In one case of this series both kidneys were markedly tubercular, the enlarged kidneys were easily palpable, so that the process undoubtedly had been going on for a long time; still this patient's first complaint (frequency) dated back only ten weeks prior to admission to the hospital.

And in this connection it is well to bear in mind that lesions *"entirely outside"* the urinary tract may be responsible for urinary symptoms (1). (Lesion of the ovaries and tubes, pelvic exudates, etc.) Seelig recently reports three cases of appendicitis which were accompanied by hematuria and pain in the loin. He says, here, then, are three cases, all of them encountered within a short period of time, and all of them characterized by the facts, first, that they were wrongly diagnosed by the operating surgeon; secondly, that pain radiating from the kidney region, and blood in the urine were prominent symptoms, and, thirdly, that the lesion was the appendix.

Before a thorough and complete cystoscopic examination can be carried out, it is necessary that certain conditions be present. The absence of some of these conditions is only relative, inasmuch as by some manipulation or another a favorable condition can be brought about. In some cases cystoscopy cannot be carried out because one or the other of the conditions cannot be fulfilled.

1. The urethra should be of such a caliber so as to freely admit the passage of an instrument of about No. 23 French. Cystoscopes of a smaller caliber, 16 French, are obtainable on the market. The picture is of necessity a very much smaller one and by no means as satisfactory as the larger pictures obtained with a larger caliber instrument. At times the first obstruction met with is due to the presence of a small external urethral orifice, which is easily overcome by the performance of a meatotomy. Not infrequently the lumen of the urethra is very small, due to the presence of urethral strictures. The passing of soft bougies or sounds at regular intervals, gradually increasing their size, soon re-establishes the lumen of the urethra, so that the cystoscope can now enter the bladder without any further hindrance. This has repeatedly occurred in the present series of cases. In these cases gradual, progressive dilatation has been resorted to rather than trying to forcibly dilate the strictures at one sitting, inasmuch as the gradual dilatation has always given the better results.

At times changes in the prostatic urethra, due to "senile enlargement of the gland," as, for example, elongation and distortion of the urethra, may cause a good deal of trouble in introducing the cystoscope. Sometimes it is impossible in the case of very large lateral and median lobes, to make a satisfactory examination. It may, therefore, in these cases, be impossible to introduce the cystoscope into the bladder; the beak, instead of being in the bladder, lies in the dilated urethra, so that when the light is turned on a cystoscopic burn may result, owing to the absence of the distending media around the lamp, which then lies in direct contact with the urethra, and so produces a burn, if the lamp is held in contact with the urethra. To overcome this error in technic a so-called prostatic cystoscope with a long shank should be used.

Force should never be used in the passage of the cystoscope, and this applies especially to cases in which an obstruction exists in the prostatic urethra, as may occur in cases of

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1. Louis E. Schmidt, "Vesical Symptoms due to Lesions Outside of the Bladder." Proceedings of the Illinois State Medical Society, 1909.

carcinoma. Naturally, in these cases, as well as in all others, the current should never be turned on until the beak of the instrument is freely movable.

The "shut-off" of the current should always be in working order, so that the current can be regulated momentarily.

A good deal has been written about the hypersensitiveness of the posterior urethra, offering an obstacle to cystoscopy, to overcome which the use of the various local anesthetics is resorted to. Local anesthesia was not resorted to in this series of cases. In those few cases where anesthesia was necessary, the use of either nitrous oxide or ether was resorted to.

The employment of local anesthetics in the urinary bladder should be carried out with a good deal of care. Formerly, when cocaine was so freely used for this purpose, it was not uncommon, after cystoscopic examinations, to see cases of intoxication following the use of cocaine as a local anesthetic.

In regard to the use of cocaine as a local anesthetic in the bladder, Willy Meyer calls attention to the danger attending its use by mentioning a case in which the patient had very marked toxic symptoms which persisted for about forty-five minutes. He also mentions Albarran's case, in which the patient died within barely fifteen minutes after its introduction into the bladder. Fenwick, on the other hand, has never seen a case presenting symptoms of so-called cocaine poisoning, although he has used the drug in a large practice.

The toxic symptoms may be explained in one of two ways, or perhaps they may be due to both. Rapid absorption of large amounts of the drug may take place in cases where there is much ulceration of the mucosa, thereby allowing absorption to take place very quickly. On the other hand, it is well known that many persons possess an idiosyncrasy for cocaine, in whom small amounts are sufficient to produce severe symptoms of intoxication.

The introduction of the newer and less toxic preparations may completely overcome this objection to local anesthesia. Dr. Schmidt does not hesitate to use a local anesthetic, but avoids their use, if possible. Most American writers advise their use—some deposit tablets into the posterior urethra, others use solutions. It is true, many men, even some with large experience, have never seen ill results from the use of local anesthetics. However, there are a sufficient number of cases known to warrant the avoidance of the reckless use of cocaine.

The second condition which is necessary in carrying out a cystoscopic examination is that the bladder shall contain a sufficiently large amount of fluid so that it can be distended, thereby avoiding burns of the mucous membrane, ironing out the folds of the bladder mucosa, thereby bringing lesions into a plainer view, and making it easier to find the ureteral orifices. The fluid distention may also be of aid in differentiating a fold of the mucosa from a papilloma.

In cases of so-called concentric hypertrophy of the bladder wall, sometimes called contracted bladder, the cavity of the bladder is much encroached upon, so that it is impossible to introduce more than a tablespoonful or perhaps two of fluid into the bladder. This is often associated with great irritability of the bladder, so that the fluid which has been introduced for purposes of distention is immediately voided by the patient. Such was the condition in case No. 44, so that a general anesthetic had to be employed.

While it is possible in these cases to examine such a bladder with a small amount of distention, and to make a diagnosis, on the whole it is usually more satisfactory to make an examination when a higher degree of distention of the bladder is obtainable. In just such cases as these any of the air methods of distention might be used with a good deal of satisfaction.

It is with the idea in mind of avoiding injury to a seriously diseased bladder that a knowledge of the bladder capacity be ascertained before the cystoscopic examination is undertaken, and especially so in those cases requiring a general anesthetic. This may be determined by having the patient hold the urine as long as possible, and then passing the urine into a graduated vessel, or by the slow and careful introduction of fluid into the bladder before the anesthesia is started, for when an attempt is made to dilate such a bladder with fluid beyond the point of tolerance, the patient immediately complains of severe pain, after which it is useless to attempt further dilatation, and thereby avoiding injury to a bladder which is already seriously diseased (1)

The third condition which must be fulfilled is that the bladder contains a clear media. As a rule, this can be accomplished by carefully washing the bladder. At times this is a very tedious piece of work, and especially so in cases of trabeculization of the bladder, where large pockets are present. This condition may be suspected during the process of irrigating the bladder, when, for example, the wash water which has returned fairly clear suddenly returns very turbid, and not infrequently contains large shreds of pus or muco-pus. This, of course, makes it necessary to continue the washing, which should now be carefully carried out, introducing the irrigating fluid very slowly and without force, thereby avoiding, if possible, a long washing, such as would be due to stirring up the debris which has collected on the bottom of the pockets or which is adherent to the sides of the bladder wall.

Oftentimes a case in which the voided urine is very turbid will require a long and a very careful irrigation before the wash water returns clear. In marked contrast stand those cases in which the voided urine is very turbid, but after just a few minutes' washing the wash water returns absolutely clear. This fact is a rather striking one, and should at once lead us to suspect a lesion in the urinary tract above the bladder.

It is true that it is possible to cystoscope cases with the Nitze instrument, if the bladder is filled with *air*; or, on the other hand, if the bladder is filled with *clear urine*. Even when the wash water does not return clear, a fair cystoscopic examination can be made; yet it is always desirable, particularly in doubtful cases, to free the bladder wall from every adherent particle, so as to see the exact condition of affairs. Besides, when watching urine from the ureters, if the water in the bladder is not clear, the urinary whirl may seem to be loaded with specks (pus, etc.).

In some cases the only complaint or indication for cystoscopy may be the occurrence of blood in the urine. If this is small in amount, it usually does not interfere with the carrying-out of the examination. At other times, profuse hemorrhages may be present, and demand treatment before an examination is undertaken. The source of the hemorrhage must also be taken under consideration. When the blood comes down the ureter from one kidney, it is usually possible, after having cleaned out the blood clots and bloody urine from the bladder, to introduce a sufficient amount of fluid in the bladder to permit of a rapid cystoscopy and to determine the origin of the bleeding.

In those cases in which the bleeding comes from the bladder and in which it is impossible to have the wash water return clear, attention is usually directed toward the control of the hemorrhage. For this purpose, rest in bed, with the use of an icebag over the suprapubic region are usually resorted to. Locally, instillations of adrenalin solution are of great value in controlling the bleeding. The

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1. This applies to cases in which the bladder is the seat of serious organic disease, such as, for example, the presence of a thin-walled diverticula. Not infrequently nervous people may complain of frequent urination of small amounts, which might suggest a small bladder capacity, but in whom no trouble is experienced in introducing large amounts of fluid. (Case No. 42.)

use of solutions of antipyrin introduced into the bladder by means of a soft rubber catheter and allowed to remain in the bladder can also be resorted to.

For routine work the above general plan has given satisfactory results, and most cases of hemorrhage can usually be controlled in this way. The use of irrigating and other cystoscopes in these cases of hemorrhage will be taken up at a future time, as previously mentioned.

Not all cases, however, respond to treatment, and in spite of everything that can be done the bleeding keeps right up, so that it not infrequently happens that a case will have to be operated upon without a cystoscopic examination being made prior to the operation (1).

In regard to the nature of the fluid used for distention and irrigating, it makes little practical difference what fluid is used, as long as it is non-irritating to the bladder, that the solution is clear, and that it does not corrode the cystoscope. Solutions of boric acid, normal salt, or oxycyanate of mercury may be used.

It is very desirable in routine cystoscopic work to always use a definite amount of fluid for distending the bladder, so that at subsequent examinations the same degree of distention be obtained, and hence the relationship in the degree of distention is always the same, so that in taking notes in regard to size, shape and position of an intravesical lesion, one is always working under the same conditions, thereby avoiding wide discrepancies in our descriptions of the findings.

It is needless to state that all manipulations should be carried out as gently as possible, so as to avoid the production of pain. This applies to the introduction of the cystoscope as well as it does to the process of vesical irrigation. The introduction of the cystoscope should produce no more pain than should the passage of a sound. An especial degree of care should be exercised when bladder irrigation is carried out by means of a catheter, especially in highly sensitive bladders, never allowing the bladder to completely empty itself, but introducing more fluid before that previously introduced has all escaped. If we allow the bladder to completely empty itself, it contracts down upon the catheter, thereby producing pain.

Various tables have been devised and positions described into which patients are placed for the cystoscopic examination. It is quite readily understood that the simpler the position, the better for both the patient and the examiner. The simplest position, and the easiest one to be obtained at all times, is to have the patient lie flat on his back on an ordinary flat-topped table, placing a small pillow or cushion under the hips, so as to elevate the pelvis. In order to always have the same degree of elevation, it is but necessary to use the same cushion at each examination. There are several advantages in using an ordinary table, and among them may be mentioned: An ordinary table can always be obtained in any hospital, whereas in the home an ordinary kitchen table plus a cushion are all that are needed.

The prone position is not in common use. There are to be seen in cystoscopic clinics all kinds of tables and chairs for cystoscopic examination purposes. Many authorities advise the necessity of these, and even doubt the

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1. Such a case was recently operated upon at the hospital by Dr. Louis E. Schmidt. The patient complained of profuse hematuria of three weeks' duration. Local and general treatment without any appreciable effect on the bleeding. It was impossible to completely remove all the blood clots from the bladder. Exploratory suprapubic cystotomy showed the following: The bladder was filled with blood, urine and large clots of blood, so that the bladder was distended almost to the umbilicus. After the cavity of the bladder was cleansed by removing the clots, a median lobe enlargement of the prostate was seen projecting into the bladder cavity, being about as large as a plum. It projected upward, appearing in general outline like a small uterus. Running across the top of this lobe were seen four or five dilated, tortuous, atheromatous arterioles, about the diameter of a pin. The blood was seen coming from several of these dilated vessels that had ruptured in some unexplainable way.

advisability of the prone position to permit catheterization and examination of the interior of the bladder. Experience is the best teacher, and the practicability of the same has always been noticeable in the work done at the Alexian Brothers' Hospital

When patients are in the sitting-up posture, and if they should feel faint during the course of an examination, it may become necessary to withdraw the cystoscope for the time being, and unless enough assistants are present the patient may fall from this position and do himself injury, while if a patient is lying flat on the back it will be impossible for any harm to befall him.

Not infrequently patients are placed in the lithotomy position, and at other times with the thighs spread far apart. These positions are often difficult for the patients to maintain, especially in those of advanced age or those suffering from joint lesions, so that not infrequently during the course of the examination the patients complain of pains and cramps in the muscles of the thighs and legs, which often necessitate an interruption of the examination until the cramps have subsided, which may be hastened by lightly rubbing the thighs and calves.

It not infrequently happens that cystoscopy is accompanied by or followed by complications. These may be divided into general and local, and of these two groups the local are undoubtedly the more common of the two.

The most common general complication, as a rule, is fainting, which of course is quite a serious matter, if we are carrying out the cystoscopic examination in the sitting posture, whereas if the patient is in the prone position as previously described, it really makes little difference, as the patient cannot do himself any injury whatsoever.

A rare complication has been reported by Dr. Louis E. Schmidt (1) which occurred in case No. 53, during catheterization of the right ureter, and which he has called *"ureteral shock."* During the passing of the ureteral catheter, the patient went into a complete state of collape. During a second catheterization of the same ureter at a somewhat later date, the patient again complained of pain and nausea when the ureteral catheter had been introduced about 8 or 10 cm. into the ureter. The catheter was partially withdrawn and again passed up into the ureter, and immediately the patient complained of severe pain and nausea. The highly sensitive area in the ureter was evidently very well localized.

In regard to catheterization, it can be stated that no untoward effect has ever been noticed in cases of ureteral catheterization when no pus was present in either kidney or pelvis. Certainly no infection of a healthy kidney has even been suspected. This agrees with all men of experience. Where pus does exist in a kidney and catheterization has taken place, a reaction has been noticed, similar to the reaction where only a bladder involvement is present.

The local complications undoubtedly are more common than the general. A good many of these local complications can be avoided, and every effort should be put forth in each case to do so, so as to reduce the complications to the minimum.

It not infrequently happens that an aggravation or an acute exacerbation of an already existing cystitis occurs. This seems to be especially so in the cases of cystitis that are associated with senile enlargement of the prostate gland, so that the pain and frequency of urination are increased. Here, of course, it is necessary to consider whether a prostatitis is co-existent. These infected and irritable prostates permit readily of reaction. On the other hand, in not a small proportion of cases the patient informs us on the next day that

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1. Proceedings of the meeting of the American Association of Gen.-Ur. Surgeons, 1908.

the urinary act is decidedly easier since the examination.

It is rare to see bleeding (after the cystoscope is withdrawn) at the end of urination of the water which has been introduced into the bladder, for purposes of distention. This has been of rather infrequent occurrence in our work, we having seen it only in a few cases of senile enlargement of the prostate.

Unless an extreme degree of care is used in the handling of the cystoscope, a burn of the mucosa may result, which has been called "ulcus cystoskopicum."

Truthfully speaking, these cystoscopic burns ought not to occur; still, considering the congestion which is often present, it is not remarkable. It goes without saying that it is not desired. If a burn does occur, it is not particularly harmful. In these cases it is our usual practice to irrigate with a catheter, using a solution of argyrol.

These ulcers are not as common now as formerly, on account of the so-called "cold" lamps, yet great care should always be taken to avoid them.

These cystoscopic burns have led to errors in diagnosis, so that the cystoscopist at the time of the second examination finds an ulcer of the bladder, whose presence he thinks he overlooked at the first examination. These ulcers have at times been mistaken for and diagnosed as tubercular and other kinds of ulcers, and it is on account of this error in diagnosis (and prognosis) that these burns should be recognized. The appearance of the burn depends, of course, upon the degree of the burn, as well as the time that has elapsed between the time the burn was produced and the subsequent examination at which the burn is discovered. In the early stages the burn is covered with an eschar, which gradually sloughs off, so that small pieces of necrotic tissue may be seen floating in the fluid. After the entire eschar has sloughed away, we may see the ulcer, and on its base are to be noted the presence of granulations. The shape of the ulcer is usually that of the instrument which produced the burning. In the largest number of cases it is usually oval and not circular in outline. The ulcers are surrounded by a hyperemic zone.

Not infrequently a large ulcer is seen on the bladder wall, which in size and the redness of its margin is out of all proportion to the bladder findings; in fact, the rest of the bladder may be absolutely normal. This at once gives us a clew toward making a probable diagnosis of "ulcus cystoskopicum."

Burns can occur at any part of the bladder. All that is needed is merely allowing the beak of the cystoscope to come in contact with the bladder mucosa and holding it there for a few minutes, which is very prone to occur during the course of a demonstration to a class. Bearing this possibility in mind, it is well during demonstrations to shut off the light every few minutes, thereby allowing the lamp to cool. It is customary to use an instrument to hold the cystoscope in place when demonstrating to more than one.

Inasmuch as most of the lesions of the bladder are to be found on the base of the bladder, and owing to the nearness of the lamp to the bladder wall during the examination, it is here that burns most frequently occur. Burns may, however, occur in the vertex of the bladder as well as on the trigone and around the ureteral orifices.

We have aribitrarily divided this series of cases into four groups; this is an old classification and has been repeatedly used for this purpose in cystoscopic work.

In Group I are placed all those cases in which the bladder condition was secondary to disease in the kidney.

Group II contains all cases in which the bladder was the primary seat of disease.

In the third group were placed all cases in which the bladder condition was secondary to disease of the internal urethral orifice or beyond it.

Lesions of the bladder associated with disease of the central nervous system and general diseases were placed in Group IV.

### GROUP I.

| Case No. | DIAGNOSIS. |
|---|---|
| 13. | Tuberculosis of kidney, left. |
| 39. | Tuberculosis of kidney, right. |
| 44. | Tuberculosis of kidney, left. |
| 52. | Tuberculosis of kidney, right. |
| 21. | Renal calculus, right. |
| 40. | Renal calculus, left. |
| 53. | Renal calculus. |
| 57. | Renal calculus, right. |

### GROUP II.

| Case No. | DIAGNOSIS. |
|---|---|
| 1. | Cystitis glandularis et follicularis. |
| 8. | Papilloma of bladder. |
| 58. | Papilloma of bladder. |
| 12. | Vesical calculus. |
| 22. | Vesical calculus. |
| 62. | Vesical calculus. |
| 15. | Contracted internal urethral orifice. |
| 23. | Contracted internal urethral orifice (post-operative). |
| 24. | Epithelioma of bladder. |
| 47. | Epithelioma of bladder. |
| 59. | Dislocation of bladder. |
| 51. | Edema of internal urethral orifice. |
| 65. | Suprapubic and perineal fistulae (post-operative). |

### GROUP III.

| Case No. | DIAGNOSIS. |
|---|---|
| 2. | Senile enlargement of the prostate (collar-shaped). |
| 3. | Senile enlargement of the prostate (median and lateral lobes). |
| 4. | Senile enlargement of the prostate (collar-shaped). |
| 14. | Senile enlargement of the prostate (collar-shaped). |
| 16. | Senile enlargement of the prostate (lateral lobes and a small median lobe). |
| 17. | Senile enlargement of the prostate (both lateral lobes). |
| 25. | Senile enlargement of the prostate (both lateral lobes). |
| 32. | Senile enlargement of the prostate (both lateral lobes). |
| 45. | Senile enlargement of the prostate (both lateral lobes). |
| 46. | Senile enlargement of the prostate (small pedunculated median lobe). |
| 48. | Senile enlargement of the prostate (lateral lobes). |
| 55. | Senile enlargement of the prostate (collar-shaped). |
| 56. | Senile enlargement of the prostate (collar-shaped). |
| 60. | Senile enlargement of the prostate (collar-shaped). |
| 9. | Senile enlargement of the prostate (collar-shaped). |
| 63. | Senile enlargement of the prostate (both lobes). |
| 64. | Senile enlargement of the prostate (lateral lobes and a median lobe). |
| 31. | Chronic prostatitis. |
| 7. | Chronic prostatitis. |
| 34. | Chronic prostatitis. |
| 35. | Chronic prostatitis. |
| 18. | Chronic prostatitis. |
| 5. | Chronic prostatitis and strictures. |
| 33. | Chronic prostatitis and strictures. |
| 37. | Chronic prostatitis and strictures. |
| 43. | Chronic prostatitis and strictures. |
| 19. | Urethral strictures. |
| 27. | Urethral strictures. |
| 30. | Urethral strictures. |
| 41. | Urethral strictures. |
| 49. | Urethral strictures. |
| 61. | Urethral strictures. |
| 50. | Bleeding from the prostate. |
| 34. | Chronic urethritis. |
| 36. | Chronic urethritis. |
| 10. | Acute generalized gonorrheal cystitis. |

GROUP IV.

Case No. DIAGNOSIS.
6. Cerebro-spinal lues.
20. Cerebro-spinal lues.
28. Tabes dorsalis.
42. Neurasthenia.

It is to be recalled that all these cases refer only to male cases.

The grouping of the cases into these four groups has been purely arbitrary and has simply been done for the sake of convenience. It will, therefore, be necessary to digress somewhat in taking up a description of the various cases, as in some of them the interesting cystoscopic findings were not the most prominent picture presented by the individual case.

A very interesting picture, both histologically as well as cystoscopically, was presented by case No. 1 in this series. At the time of operation nodules were found in the bladder, a few of which were excised and examined histologically, revealing the picture of a cystitis follicularis and glandularis (1).

In two cases a rare cystoscopic picture presented itself, namely, the urachus had not been completely obliterated so that the condition could be diagnosed without any difficulty. On account of the infrequent occurrence of this condition, a detailed report of the findings in each case will be given.

Case No. 6. Entered the hospital July 5, 1908, with the clinical diagnosis of cerebro-spinal lues. Cystoscopy: At the apex of the bladder may be seen an open urachus, large enough to admit the tip of the little finger, around which is to be seen a marked degree of trabeculization of the bladder. Trabeculization is also to be seen over the entire bladder wall. The prostatic tissue extends completely around the internal urethral orifice, forming the so-called collar-shaped hypertrophy of the prostate.

The second case of open urachus was found in Case 9 of this series.

The patient, aged 76, entered the hospital on June 27, 1907. Upon admission to the hospital the patient complained of pain over the bladder region, pain in the glans penis during urination, difficulty in starting the stream, and slight incontinence.

Cystoscopy shows a slightly trabeculated bladder on the left lateral wall. The blood vessels are atheromatous. In the apex of the bladder is to be seen an open urachus, surrounded by a slight degree of cystitis, and a marked degree of trabeculization. The urachus is patent for a short distance only. Some of the trabeculæ show the presence of ulcertion. The internal urethral orifice is completely surrounded by prostatic tissue, the surface of which is irregular in outline.

In both of these cases this condition was found during the course of the cystoscopic examination, and they are to be looked upon simply as additional cystoscopic findings, which of course could never have been diagnosed in any other way.

An interesting fact in connection with these two cases is that both of them entered the hospital within a period of seven days.

These findings bring up the question of diverticula of the bladder, on account of the similarity in the cystoscopic picture.

Diverticula of the bladder are usually divided into two groups, the congenital and the acquired. The acquired form, which is by far the more common of the two forms, occurs in cases in which there has been an obstruction to the outflow of urine, with a secondary trabeculization of the bladder, which ultimately leads to the formation of diverticula. This condition is commonly associated with cases of "senile enlargement of the prostate gland." These diverticula are usually situated in the lower lateral walls, and they are surrounded by the prominent muscle bun-

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1. A detailed report of this case was published in the November issue of *Surgery, Gynecology and Obstetrics,* 1908, p. 510.

dles, due to the presence of which their outline is not strictly round or circular.

The congenital diverticula are generally placed in a group by themselves, and they are differentiated from the acquired diverticula by the following:

1. Congenital diverticula almost always occur singly, whereas the acquired diverticula are generally multiple.
2. The acquired diverticula are surrounded by thick muscle bundles, which condition is not present to such a marked degree in the congenital diverticula.
3. The congenital diverticula are usually of a well-defined circular outline.
4. Not infrequently the congenital diverticula is the only lesion present.
5. A fifth diagnostic point can be added in these two cases, namely, the location of the diverticula, which occurred in the apex of the bladder, at the location where we would expect to find the urachus. In Case 9 the patient complained of pain over the bladder region. It is not probable that there is any causal relation between the presence of the open urachus and the pain, for the pain has only been a recent complaint.

In this series of cases there occurred a total of seventeen cases of "senile enlargement" of the prostate gland, which, according to the cystoscopic picture, may be divided into four groups:

1. Collar-shaped enlargement. This condition was present in seven of the seventeen cases, and it is characterized cystoscopically by the presence of prostatic tissue, which completely surrounds the internal urethral orifice.
2. Next in frequency were the cases of lateral lobe enlargement, of which there were six out of the seventeen cases. The cystoscopic picture in this condition is very characteristic. In the cystoscopic picture one sees two red tumors bulging into the field, one from each side, the two bulgings being separated from one another by the so-called "prostatic thor." A picture very similar to this can be easily produced by an error in the technic, and this may lead to a wrong diagnosis. This is produced when the beak of the cystoscope is depressed by raising the ocular end of the cystoscope. This error can be avoided simply by bearing this fact in mind.
3. In two cases there occurred both an "enlargement" of the lateral lobes and an enlargement of a median lobe, and in one case beside the presence of the two lateral lobes a distinct median bar was present.
4. In one case only was the enlargement present in the form of a median lobe. The median lobe was very small, and it had a very distinct pedicle. There are several interesting features of this case which will bear mentioning in detail. Five years ago the patient had a suprapubic prostatectomy performed, from which he had made a complete recovery. Recently, a suprapubic fistula developed, for the relief of which the patient entered the hospital. At the operation a small median lobe was found, about the size of a large kidney bean, springing from a small but well-defined pedicle.

There were three cases of vesical calculus. In one case the patient had been suffering from bladder symptoms for a period of six years; by means of a suprapubic cystotomy a stone, the size of a plum, was removed. The second case was cystoscoped five days after the onset of a typical renal colic. Cystoscopically, the right ureter was seen to be patent and on the base of the bladder a small stone, about the size of a bean, was seen. The presence of the small stone, the patent ureteral orifice, and the clinical history left no doubt as to the diagnosis of a ureteral colic due to the passage of the stone, which was seen in the bladder.

In the third case a stone the size of a split English walnut was found; the entire surface of the stone had a honey-combed, excavated, appearance, to which much debris was adhering. This patient gave a distinct history of having had several attacks of renal colic beginning about four years ago, so that undoubtedly the nucleus for the bladder stone is to be looked upon as a stone which came down from the kidney. No cystoscopic picture is clearer and more distinct than is that of stone. Not only are we able to diagnose the presence of stone, but we can also determine the number of stones present, their size, and also whether they are free in the bladder cavity, or whether they are situated in a diverticula. A stone in a diverticula or those situated in the *bas fondc* are those most commonly missed with the stone searcher. If in the *bas fondc,* one stone can often be on top of the other, and the second one can be overlooked, cystoscopically.

There were four tumors of the bladder, two of which were papillomas and two were epitheliomas. In both cases of epitheliomas the initial symptom was blood in the urine. In case No. 24 the first hemorrhage occurred four years ago. The tumor was situated on the left side of the bladder, completely obstructing the left ureteral orifice, which could not be seen on account of the overhanging, elevated and rounded edge of the infiltration, which was about one-half inch to the left of the position in which the ureteral orifice ought to have been found. In case 47 an infiltrating tumor was found, which did not grow into the bladder cavity, but seemed to grow in the bladder wall. Beside the presence of the tumor, small grapelike nodules, varying in size from a pinhead to a split pea, were seen. These small nodules were semi-transparent, and there was a distinct difference between them and between an edema—more firm, and on close examination blood vessels can be seen.

The two cases of papilloma of the bladder presented the characteristic cystoscopic picture of this lesion. The villi were plainly seen floating in the vesical fluid; in the villi the vessels can be seen, by means of which a villus may be distinguished from a fold of mucosa or from an edema of the mucous membrane.

In case No. 8 the only symptom of which the patient complained was the presence of blood in the urine. Ten days before entering the hospital he had had one attack of retention. He was catheterized and bloody urine removed. Cystoscopically, a papilloma the size of a small hen's egg was seen around the right ureteral orifice.

Although the condition called "contracted internal urethral orifice" is usually looked upon as a rare condition, and in fact receives no mention in some of the recent textbooks, there were two cases in this series. One of them was a case of the so-called simple type, and one was secondary to a suprapubic cystotomy.

In both of these two cases trabeculization of the bladder was well-marked, and a high degree of cystitis was present in each case. This condition is most frequently mistaken in diagnosis for enlargement of the prostate, and it should always be borne in mind in the differential diagnosis, especially if the patient gives a history clinically of enlargement and when upon rectal examination a normal prostate is felt.

One case presented the rather unique picture of a dislocation of the entire bladder. This was due to a distortion of the bony pelvis, which was tilted toward the right side, due to shortening of the right lower extremity, which followed a fracture of the hip during infancy. The cystoscopic picture shows an apparently dislocated bladder. The right wall of the bladder is distended away to the right side of the pelvis, so that there is an entire shifting of the bladder and an apparent sagging of the right wall of the bladder. The anterior part of the left lateral wall is practically in the median line. Beginning trabeculization of the right lateral half of the *bas fondc.* A mild degree of cystitis was present.

There were four cases of tuberculosis of the kidney. In all cases there was a secondary or descending tuberculosis of the bladder. In many of the cases of tuberculosis the first symptoms which bring the patient to the physician are the bladder symptoms. Although the renal involvement has gone on to a very severe degree, yet no symptoms are produced by the kidneys. In case 44 the patient complained of increased frequency of urination and pain for only ten weeks. Both kidneys were markedly enlarged. The bladder was contracted, so that it would only hold about one and one-half ounces of boric acid solution. Three of the four cases were far advanced cases, and showed severe bladder changes, namely, severe inflammatory signs, besides very well-marked trabeculization of the bladder, as well as the presence of ulcers. In one case, No. 52, tubercular ulcers were seen situated around the right ureteral orifice.

Whenever a patient presents himself for cystoscopic examination, who gives a clinical history of renal stone, our attention is naturally directed to the ureteral orifice of the same side as that upon which he complains of the symptoms. The changes about the ureteral orifice can be roughly grouped into two groups: (1) The condition of the ureteral orifice; (2) the character or its efflux.

In one of the cases (No. 22), in which the patient had just passed a small stone, the ureteral orifice was patent, and gaping, and the small stone was found in the base of the bladder.

Inability to find one ureteral orifice may occur whenever associated secondary changes are present in the urinary bladder, or the ureteral orifices may be obscured, due to the presence of an enlarged prostate gland.

In one of the cases (No. 40), a generalized well-marked cystitis was present. The trigone showed a peculiar fluffy condition. The right ureteral orifice was situated on a well-marked elevation. The left ureteral orifice could not be seen. In the area where one would naturally expect to find the ureter, there was present beside the inflammatory changes and the edema many superficial erosions and ulcerations. There were also to be seen a few submucous hemorrhages. The cystoscopic findings pointed to a left-sided lesion, which was verified by the Roentgen picture.

At times the normal efflux is replaced by one of blood or pus. Such a condition existed in case 21, in which there was no cystitis present, but the urine coming from the right ureter was turbid.

Just as the senile enlargement of the prostate gland produces changes about the internal urethral orifice which we may recognize cystoscopically, so other changes that occur in the prostate can at times be recognized in this manner. Needless to say that cystoscopic examination in a patient suffering from an acute prostatitis is rarely, if ever, justified.

In one of the prostatic cases (No. 50) the only complaint was the "occasional" presence of blood in the urine. This occurred at irregular intervals and varied in amount. There were no other symptoms to aid in making a probable diagnosis of the seat of the hemorrhage. With the cystoscope the internal urethral orifice was seen to be swollen, and in a few places blood could be seen oozing from the swollen orifice.

In five cases of chronic prostatitis there were changes around the internal urethral orifice and changes in the bladder were noted as well. One patient (No. 18) of these five had been sent in as a neurasthenic. Upon cystoscopic examination both lobes of the prostate were seen projecting into the bladder, and a mild degree of cystitis was also present. A varying degree of cystitis was present in all of the cases; trabeculization of the bladder occurred in one case (No. 31). This case showed, beside trabeculization of the bladder, a trigone cystitis of velvetry character, and the internal urethral orifice was slightly edematous. In the velvety area of the trigone, about half an inch posterior to the internal urethral orifice, and in the median line, was to be seen a rounded elevation, about the size of a pea; the upper portion is transparent, the base contains no vessels. This was inferred to be a chronic edema upon an inflammatory base (not an edema bullosum).

Hugh Young says that in some cases of chronic prostatitis a definite median bar is present, and that these cases may be accompanied by residual urine and trabeculization of the bladder, just as in any other obstructive condition.

There are undoubtedly a good many patients who are looked upon as neurasthenics, or often designated as cases of nervous irritability of the bladder, in whom the true state of affairs would quickly and positively be cleared up by massage of the prostate or a cystoscopic examination.

Whenever an obstruction to the outflow of urine is present, it necessitates an increased amount of work on part of the muscular coat of the bladder wall, just as a pyloric stenosis is followed by hypertrophy of the muscular coat of the stomach. This results in hypertrophy of the muscularis and produce the cystoscopic picture known as trabeculization of the bladder. This compensatory hypertrophy is very beautifully seen in cases of urethral strictures. The degree of trabeculization is dependent upon the duration of the obstruction. In the early stages only a slight prominence of the muscle bundles may be seen, which completely disappears after the obstruction is overcome, so that no trace of the condition can be seen at a subsequent cystoscopy. If the obstruction continues for a longer period of time, the trabeculization continues, so that finally pockets or diverticula may be seen. Sooner or later the picture of cystitis is added to that of the trabeculae.

In five of the six cases of stricture, cystitis was present. Trabeculization was present in three cases, and nothing was mentioned of the presence or absence of this condition in the remaining three cases. Case No. 19, who was cystoscoped after an external urethrotomy, showed the interesting picture of an edema bullosa. The mucous membrane around the internal urethral orifice is very fluffy, has a white color, and is almost transparent. The orifice is very irregular in outline, and there were seen the presence of small vesicles filled with fluid.

In four cases both prostatitis and strictures were present. All cases showed edema of the internal urethral orifice. The internal urethral orifice showed very marked irregularity, so that the normal smooth thin delicate outline was replaced by one of great irregularity.

One patient (Case 65) who had been recently operated upon for a stone in the bladder (first operation, perineal section without removal of the stones; second operation suprapubic cystotomy) entered the hospital with two fistulae. The suprapubic opening was very wide, freely admitting the cystoscope, so that it was possible to do both a cystoscopy through the urethra as well as through the suprapubic fistula.

The regular cystoscopy was carried out by introducing about six ounces of sterile water into the bladder, during which time and until the examination was completed the edges of the suprapubic wound were held together. A very severe degree of cystitis was seen extending into the *bas fond*. Both ureteral orifices were elevated and gaping, situated at the end of the interureteric ligament. The view of the left ureter is partially obstructed by the trigone cystitis.

On account of the perineal wound, a metal catheter was introduced into the bladder. Through this sterile water was introduced into the bladder until it flowed out of the suprapubic fistula and then the cystoscope was introduced through the suprapubic fistula.

Suprapubic cystoscopy. The metal catheter can be seen very plainly coming out of the internal urethral orifice. The entire trigone is fluffy. The lateral walls and the posterior wall show only the slightest trace of cystitis. Here and there normal areas of bladder mucosa were seen. Slightly to the left of the median line a great irregularity of the internal urethral orifice is to be seen, which may be due to the trauma of the previous operation.

The lower end of the suprapubic incision extends almost to the internal urethral orifice.

One case (No. 51) showed only, the presence of an edema of the internal urethral orifice. The patient returned to the hospital for a cystoscopic examination, on account of some increased frequency of urination. Several years ago, Dr. L. E. Schmidt performed a left-sided nephrectomy for stone. This case gave us an opportunity to study the left ureteral orifice, which cystoscopically appeared normal, with the exception that there were no ejaculations. The internal urethral orifice shows the presence of a peculiar grape-like formation, which contain no blood vessels.

The condition of the above-described ureter is often called a dead ureter, on account of its inactivity, due in this case to the absence of the kidney. Great care should be exercised, however, in diagnosing a dead ureter, simply from the fact that one cannot see ejaculations of urine. It may be due at times to a nervous inhibitory mechanism, resulting in a temporary cessation of kidney activity. To advise a nephrectomy under these conditions would be a serious error, and should never be done unless resort has been made to all other diagnostic methods and resorting even to the use of anesthesia in the cases of young and bashful girls.

Organic lesions of the central nervous system may first show their presence by symptoms referable to the urinary bladder. The subjective symptoms may vary. At times, and especially in the beginning, symptoms of irritation at the neck of the bladder may be present. After the subsiding of the symptoms of irritation, the only complaint may be the inability to completely empty the bladder. In some patients their first and only complaint may be a loss of urine at night, whereas other patients complain of sexual symptoms only.

In lesions of the central nervous system and especially in those cases of tabes associated with bladder disturbances, a striking picture is seen upon cystoscopic examination, namely, "the presence of a trabeculated bladder in the *"absence"* of any obstruction to the urinary outflow," such as are usually associated with trabeculization of the bladder—due to increased frequency of urination, namely, enlargement of the prostate or urethral strictures. In the early stages the only cystoscopic finding may be an increased vascularity or a hyperemia to account for the urinary symptoms.

In case No. 28 a generalized trabeculization of the bladder was seen, being especially marked in the *bas fond.* The pupils reacted but faintly to light, and the knee jerks were much diminished.

There were two cases of cerebro-spinal syphilis showing trabeculization of the bladder. Case 6 entered the hospital on account of dribbling of urine at night. Cystoscopically, well-marked trabeculization of the bladder was seen. Case No. 20 showed a slight degree of trabeculization of the bladder, although his symptoms (incontinence of urine and feces) were only of a few weeks' duration.

Not every case in which a trabeculization of the bladder occurs is to be looked upon as tabes, as is shown in these two cases of cerebro spinal lues.

In writing on the subject of trabeculization of the bladder in tabes, Frankl-Hockwart says that similar conditions were found in a case of psammom of the dura, in a case of syringomyelia and three times in injuries to the cord.

Only one case in this series could be looked upon as a true neurosis of the bladder, this occurred in case No. 42. The patient's only symptom was increased frequency of urination. It goes without saying that before the diagnosis of a neurosis can be made it is not only necessary to examine a patient cystoscopically but all other possible causes of increased frequency of urination must be excluded. It not infrequently occurs that because the cystoscopic examination is negative, and the patient complains of increased frequency of urination, a diagnosis of a neurosis of the bladder is made, and in whom a seminal vesiculitis, hemorrhoids, or some other condition is found which may explain the bladder symptoms.

I wish to take this opportunity to thank Dr. Louis E. Schmidt for his having placed the clinical records of these cases at my disposal, as well as for his many valuable suggestions and his interest taken in carrying out the work.

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